

SELF ASSEMBLED MICRO ANTI-STICTION STRUCTURE

ABSTRACT OF THE DISCLOSURE

A method and apparatus are described for reducing stiction in a MEMS device having a
5 movable element and a substrate. The method generally comprises providing the substrate
with an anti-stiction member and interposing the anti-stiction member between the moveable
element and the substrate. The apparatus generally comprises an anti-stiction member that is
interposable between the moveable element and the substrate. Another embodiment of the
invention of the invention is directed to a MEMS device, comprising: a substrate, a moveable
10 element moveably coupled to the substrate, and an anti-stiction member that is interposable
between the moveable element and the substrate. A further embodiment of the invention is
directed to an optical switch having one or more moveable elements moveably coupled to a
substrate, and an anti-stiction member that is interposable between at least one of the
moveable elements and the substrate. The anti-stiction member may be in the form of a
15 flexible cantilevered structure that overhangs the moveable element. Actuating the moveable
element causes the anti-stiction member to flex and snap into place between the moveable
element and the substrate. An additional embodiment of the invention is directed to a method
of fabricating a MEMS device. The method proceeds by providing a silicon-on-insulator
(SOI) substrate; defining a moveable element from a device layer of the SOI substrate; and
20 depositing a flexible material over the device layer and the moveable element. One or more
portions of the flexible material overhang the moveable element, whereby the flexible
material forms one or more anti-stiction members.